NOTICE!

ALL DRAWINGS
ARE LOCATED
AT THE END OF
THE DOCUMENT

RFP 1325 02 (Rev 3/96)
Previous siv RF 46522

1F100

CORRES CONTROL
INCOMING LTR NO

00692 RF 96

DUE
DATE

ACTION

DIST	LTR	ENC
ALLEN, R C		
BENSUSSEN, S J		
BRENNAN, P D		
BUHL, T R		
CARD, R G		
DEAN, C		
EVANS, B L		
FERRERA, D W		
GEIS, J A		
GILLISON, W R		
GLOVER, W S		
HARROUN, W P		
HEDAHL, T G	X	
HERRING, C L		
HILL, J A	X	
KELL, R E		
KELLY, G M		
MANI, V		
MARTINEZ, L A		
McANALLY, J L		
McGOVERN, L J		
McKIBBIN, J G		
MEADOWS, S M		
NORTH, K		
OGG, R N		
SANDLIN, N B		
SHUMWAY, W K		
SPEARS, M S		
STEELMAN, M		
TUOR, N R		
TURNER, K A		
VOORHEIS, G M		
Wiemelt, K	X	
Powers, A	X	
Uhrich, E	X	

CORRES CONTROL	X	X
ADMN RECORD/080	X	X
PATS/T130G		

Reviewed for Addressee
Corres Control RFP

5/16/96 DATE BY

Ref Ltr #

DOE ORDER # 5400.1

1/14

- RF515-CC- 1

Department of Energy

ROCKY FLATS FIELD OFFICE
P O BOX 928
GOLDEN COLORADO 80402-0928

MAY 15 1996

96-DOE-09972

Mr Joe Schieffelin, Unit Leader
Compliance Program
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, Colorado 80222-1530

0000061664

Dear Mr Schieffelin

Enclosed are copies of the Quarterly Report for the combined OU1/OU2 IM/IRA Consolidated Water Treatment Facility for the 2nd quarter FY96 (January-March)

If you have any specific questions, please contact Dave George at 966-5669

Sincerely,

for Bob April, Lead
Stakeholder and Environmenal Liaison

Enclosure

cc w/Enclosure
C Gesalman, EM-45, HQ
G Kleeman, EPA
B Fraser, EPA
C Gilbreath, CDPHE
C Spreng, CDPHE
Admin Record

cc w/o Enclosure
J Kerridge, TAD, RFFO
S Tower, EAG, RFFO
D George, EAG, RFFO
T Hedahl, K-H

MAY 1996
RECEIVED
RECORDS CENTER

ADMIN RECORD

BZ A 000487

QUARTERLY REPORT

CONSOLIDATED WATER TREATMENT FACILITY

FOR JANUARY THROUGH MARCH 1996 INCLUDING OU1/OU2 DATA SUMMARY FOR OCTOBER THROUGH DECEMBER 1995

Rocky Mountain Remediation Services, L L C

April 1996

2

TABLE OF CONTENTS

FIGURES

TABLES

3

1 0 INTRODUCTION

1 1 HISTORICAL PERSPECTIVE - OU1

The Operable Unit No 1 (OU1) Water Treatment Facility located in Building 891 began operation in April 1992 Building 891 has historically been used to treat the following waters

Groundwater collected from the 881 Hillside area (the French Drain Sump and the Collection Well)
Water collected in the Building 881 Footing Drain (collection and treatment of this water was discontinued in September 1994)
The majority of the water collected at the Main Decontamination Facility
Some groundwater well purge water
Rain water/snow melt pumped from the Building 891 Truck Dock and Tank Farm

Water from the French Drain Sump is piped directly to one of the Building 891 influent storage tanks each operating day The depth of water level in the French Drain Sump typically regenerates from about a 1 foot low (after pumping) to 4-6 feet (over a one day period) The water from the Collection Well is pumped into a trailer mounted container each operating day and the container is then transported to Building 891 for off loading and treatment

The water from the French Drain Sump and from the Collection Well is temporarily stored in one of two influent collection tanks prior to treatment. The water is then treated with an ultraviolet (UV) light/hydrogen peroxide system for the removal of volatile organic compounds (VOCs) and a four step ion exchange (IX) system for the removal of uranium total dissolved solids hardness alkalinity anions and selected metals

After treatment, the water is stored in one of three effluent storage tanks until laboratory sample results are received to verify that the water chemistry meets OU1 Applicable or Relevant and Appropriate Requirements (ARARs) and is acceptable for discharge into the South Interceptor Ditch (SID)

1 2 HISTORICAL PERSPECTIVE - OU2

The Operable Unit No 2 (OU2) Field Treatability Unit (FTU) Granular Activated Carbon Treatment Units (located in trailer T 900C) began operation in May 1991 and the Radionuclides Removal System (located in trailers T 900A and T 900B) began operation in April 1992 The FTU was historically used to treat the following waters

Surface water collected from Surface Water Stations SW 59 SW-61 and SW 132 (collection and treatment of water from SW 61 and SW 132 was discontinued on May 6 1994)
Some of the water collected at the Main Decontamination Facility
Some groundwater well purge water
Rainwater collected from FTU trailer containments
Soil Vapor Extraction condensate water

Collected surface water was pumped directly from the surface water stations to Equalization Tank T 200 via a heat traced pipeline However in May 1995 because heavy rains interrupted power at the SW 59 weir and may have compromised the integrity of the pipeline it became necessary to collect and transport water from SW 59 to T 200 using a trailer mounted container The use of the container for collection and transport will be discontinued as soon as construction of the double walled storage tank adjacent to SW 59 is complete

Collected surface water was stored in Equalization Tank T 200 until enough water was present to justify initiating a batch treatment. The water was then treated using pH adjustment, chemical precipitation and cross flow membrane filtration for the removal of radionuclides and metals, and GAC for the removal of VOCs No effluent holding tank existed at OU2, and therefore treated effluent from the FTU was discharged directly to South Walnut Creek as it was processed The last process run for the OU2 FTU trailers at the OU2 location was August 8 1995 and the final reading on the OU2 FTU totalizer was 24 856,900 gallons of water treated.

1 3 CONSOLIDATED WATER TREATMENT FACILITY

During the January through March 1996 period, work continued on the consolidation of the OU1 and OU2 treatment facilities to create the Consolidated Water Treatment Facility (CWTF) The CWTF consists of the following specific unit operations

Chemical precipitation (T-900A/T-900B)
Cross-flow membrane microfiltration (T 900A/T-900B)
Ultraviolet Light/Hydrogen Peroxide Oxidation (Bldg 891)
Granular Activated Carbon (Bldg 891)[1]
Ion Exchange (Bldg 891)

Highlights of the construction and subsequent operation of the CWTF are as follows

August 18, 1995 The OU2 trailers T-900A and T-900B were relocated to the south side of Building 891 (the T-900C GAC trailer was not relocated)
September 18 1995 The first day that OU2 SW-059 water which is transported to the CWTF via trailer-mounted container was treated in Building 891
October 17, 1995 The OU2 Equalization Tank T-200 was relocated to the southeast corner of Building 891
February 7 1996 Acceptance at the CWTF of ER Accelerated Action Project water (water from the emptying and cleaning of Tanks T-2 and T-40)
February 27 1996 Installation of the Granular Activated Carbon Unit in Building 891 complete
February 29 1996 Treatment of T-2 and T-40 water (ER Accelerated Action Project water) through the OU2 trailers chemical precipitation/microfiltration system.

The CWTF is expected to treat contaminated water from the following sources

OU1 groundwater
OU2 surface water
Decontamination water from the Main Decontamination Facility
Decontamination water from the Protected Area Decontamination Facility
Other ER waters (e g purge water water pumped from containments, etc)
Waters from ER Accelerated Action Projects

The CWTF flowpath is flexible enough to allow waters to be treated through particular unit processes as necessary and to allow for re-treatment if necessary The consolidation of the OU1 and OU2 water treatment facilities has reduced waste generation and significantly reduced direct operating costs

[1]It was anticipated that the Consolidated Water Treatment Facility would also include cartridge filtration however this project was canceled due to budget cuts

5

2 0 CWTF OPERATIONS (JANUARY, FEBRUARY, MARCH 1996)

2 1 QUANTITIES OF WATER COLLECTED AND TREATED

Table 2 1 summarizes the quantities of water treated at the CWTF for the period January through March 1996 During this period the CWTF accepted water from the following sources

OU1 French Drain Sump
OU1 Collection Well
OU2 Surface Water Station SW 59
Water from the emptying and cleaning of Tanks T 2 and T-40 (an ER Accelerated Action Project)
Snow melt pumped from CWTF containments

As can be seen from Table 2 1 a total of approximately 109 886 gallons of water was treated through the Building 891 Ion Exchange Columns Approximately 12,418 gallons of the total 109 886 gallons was treated through the Building 891 GAC Unit during the January through March 1996 period In February 1996 approximately 8 220 gallons of water was treated through the OU2 trailers precipitation/microfiltration system This 8 220 gallons was also part of the total 109 886 gallons treated through the Building 891 Ion Exchange Columns

Please note that because the CWTF is equipped with three Influent Tanks the amount of water treated may be less than or greater than the amount of water collected for any given period.

One CWTF Effluent Storage Tank was released to the SID during the January through March 1996 period (refer to Table 3-4 for a listing of the most recent discharges from CWTF Effluent Storage Tanks)

As of the end of March 1996 approximately 3 249 707 gallons of water has been processed through the Building 891 Ion Exchange Columns

2 2 CHEMICAL USAGE

The following chemicals are utilized during wastewater treatment operations at the CWTF

Building 891
- Hydrogen peroxide (UV oxidation)
- Hydrochloric acid (ion exchange regeneration and pH adjustment)
- Sodium hydroxide (ion exchange regeneration)

T 900A/T 900B trailers
- Sulfuric acid (pH adjustment. TK 1 and effluent, filter module chemical cleaning)
- Calcium hydroxide (precipitation)
- Ferric sulfate (precipitation)
- Hydrogen peroxide (chemical cleaning of filter modules)
- Sodium hydroxide (pH adjustment. TK 2)
- Sodium hypochlorite (chemical cleaning of filter modules)

Table 2 2 summarizes the quantities of chemicals utilized during the period of January through March 1996

TABLE 2-1
CONSOLIDATED WATER TREATMENT FACILITY
APPROXIMATE QUANTITIES OF WATER COLLECTED AND PROCESSED a/

Month/Year	Gallons Collected from the OU1 French Drain Sump b/	Gallons Collected from the OU1 Collection Well b/	Gallons Accepted at Bldg 891 from the MDF and Other Sources c/	Gallons Pumped from Bldg 891 Containments	Gallons Collected from the OU2 SW-59 d/	Gallons Processed through T900A/T900B e/	Gallons Processed through GAC at Bldg 891	Gallons Processed through IX at Bldg 891
Jan-96	20 590	1 400	4 500 f/	2 421	5 840	0	0	36 925
Feb-96	21 224	1 420	8731 g/	500	5 765	8 220	0	27 363
Mar 96	31 864	1 730	3 321 h/	8,046	5,680	0	12 418	45,598
Ist Quarter Totals	73 678	4 550	16,552	10,967	17,285	8 220	12 418	109 886

a/ Please note that because the CWTF is equipped with Influent Tanks the quantity of water collected will not necessarily equate to the quantity of water processed
b/ This ground water is collected each operating day (i e 5 days per week)
c/ Other sources may include purge water ER Accelerated Action Project water etc
d/ This surface water is collected daily (i e 7 days per week)
e/ The OU2 FTU trailers T 900A/T 900B were operated at the CWTF for the first time on February 29 1996
f/ This water was potable water which was used during the tightness testing of CWTF Influent Tank T 200
g/ This quantity of water was comprised of approximately 8203 gallons from the emptying and cleaning of T 2 and T 40 (an ER Accelerated Action Project) and 528 gallons of potable water used for OU2 trailer start up/testing
h/ This water was from the emptying and cleaning of Tank T 2

TABLE 2-2
CONSOLIDATED WATER TREATMENT FACILITY
CHEMICAL USAGE

	Building 891			T-900A/T 900B					
Month/Year	Hydrochloric Acid 36% (gallons)	Sodium Hydroxide 50% (gallons)	Hydrogen Peroxide 50% (gallons)	Sulfuric Acid a/ 98% (gallons)	Calcium Hydroxide (pounds)	Ferric Sulfate (pounds)	Hydrogen Peroxide 35% (gallons)	Sodium Hydroxide 50% (gallons)	Sodium Hypochlorite (gallons)
Jan 96	0	16	4	0	0	0	0	0	0
Feb 96	0	54	5	17	10	14	0	5	0
Mar 96	95	60	4	0	0	0	10	0	0
1st Quarter Totals	95	130	13	17	10	14	10	5	0

a/ Occasionally a small amount (approx 1 gallon) of this sulfuric acid is used in Building 891 for effluent pH adjustment

2 3 WASTE GENERATION

The following types of waste are generated during normal wastewater treatment operations at Building 891 and the T 900A/T 900B trailers

Building 891
- used filter socks
- neutralized ion exchange regenerant
- personnel protective equipment

T 900A/T 900B trailers
- filter press sludge cake
- personnel protective equipment
- used filter membranes

Table 2 3 summarizes the types and quantities of the waste generated during wastewater treatment operations at Building 891 and the T 900A/T-900B trailers for the first quarter of 1996. One tanker truck load (approximately 4,211 gallons) of neutralized regenerant water from Tank T 210 was sent to the 374 evaporator for processing in March 1996

9

TABLE 2-3
CONSOLIDATED WATER TREATMENT FACILITY
WASTE GENERATION

	Building 891			T 900A/T 900B		Bldg 891/T 900A/T 900B
Month/Year	Filter Socks (55 gal drum)	Neutralized Regenerant to 374 (gallons)	Spent GAC (pounds) a/	Sludge Production (55 gal drum)	Used Filter Membranes (55 gal drum)	Personal Protective Equip (55 gal drum) b/
Jan 96		0	0	0	0	
Feb 96		0	0	0	0	
Mar 96		4 211	0	0	0	
1st Quarter Totals	0 c/	4 211	0	0	0	2 drums c/ d/

a/ A Granular Activated Carbon unit was installed in Building 891 in February 1996

b/ PPE is monitored for radiological contaminants and if determined to be acceptable for unrestricted release is sent to the Rocky Flats landfill for disposal Until the acceptance water from an ER Accelerated Action Project in February 1996 no PPE from Building 891 or the T 900A/T 900B trailers had been found to be radiologically contaminated

c/ PPE is collected from water treatment operations MDF decontamination operations etc and is drummed collectively

d/ These drums are filled gradually and therefore only quarterly totals are reported

10

3 0 INFLUENT AND EFFLUENT SAMPLING (OCTOBER, NOVEMBER, DECEMBER 1995)

3 1 881 HILLSIDE GROUNDWATER CHARACTERISTICS

The 1992 French Drain Performance Monitoring Plan (FDPMP) requires monitoring of French Drain performance The FDPMP requires groundwater level measurements of designated French Drain monitoring wells 4787 4887 10092 10192 10292 10392, 10492 10592 10692 10792 10892 10992 11092 31491 35691 39991 45391[2] Additionally quarterly sampling of the wells is required. However not all locations are sampled for all parameters due to the small quantities of water generated at many of these locations Also as noted in the previous quarterly report, 16 wells were removed from the site monitoring program at the beginning of the 1996 fiscal year

Table 3 1 presents a synopsis of the selected ground water monitoring well data for the following categories of constituents

VOCs
Radionuclides
Metals
Water Quality

All constituents which exceeded OU1 ARARs are included in Table 3 1 however compounds which did not exceed OU1 ARARs are not necessarily included in the table

As can be seen from Table 3-1 during the October November December 1995 period those constituents which did exceed OU1 ARARs include the following

GROUND WATER WELLS

Compound	Exceedance Range	Units	OU1 ARAR
Trichlorethene	8	ug/L	5
Gross Alpha	20 91 to 31 89	pCi/L	15
Selenium	258 to 20 2	ug/L	10
Sulfate	308 to 490	mg/L	250
Total Dissolved Solids	720 to 1524	mg/L	400

Note that Bromoform was detected in Well # 10692 at an estimated value of 0 2 ug/L and that trichlorofluoromethane was detected in Well # 31491 at 0 8 ug/L however neither of these compounds have associated OU1 ARARs

Figure 3 1 is a water level map that was constructed for the January through March 1996 period This water level data is taken quarterly and this map was developed based on water levels taken in January 1996 Note that due to an oversight which has since been corrected, the water levels in 12 routinely monitored wells were not measured during the January through March 1996 quarter

---

2 Well #39991 was reported as damaged in April 1993 and has been abandoned Well # s 4787 10192 10392 and 45391 were reported as dry during the January 1996 water level monitoring Bedrock wells are not used during the development of the ground water level maps

April 29 1996

TABLE 3 1
CONSOLIDATED WATER TREATMENT FACILITY
COMPARISON OF SELECTED GROUND WATER WELL CONSTITUENTS TO OU1 ARARS
OCTOBER, NOVEMBER, DECEMBER 1995

			GROUND WATER WELLS								
			WELL 10092	WELL 10492	WELL 10592	WELL 10692	WELL 10792	WELL 10992	WELL 11092	WELL 31491	WELL 35691
			Alluvial	Bedrock	Alluvial	Alluvial	Bedrock	Alluvial	Alluvial	Alluvial/Bedrock	Alluvial
COMPOUND	OU1 ARAR	UNITS	20 Nov 95	6 Dec 95	12 Dec 95	9 Nov 95	6 Dec-95	27 Nov 95	28 Nov 95	27 Nov 95	29 Nov 95
1 1,1 Trichloroethane	200	ug/L	1 U a/	1 U	1 U	0 5 U	1 U	0 5 U	0 5 U	0 5 U	0 5 U
1,1,2 Trichloroethane	5	ug/L	1 U	1 U	1 U	0 5 U	1 U	0 5 U	0 5 U	0 5 U	0 5 U
1,1 Dichloroethane	5	ug/L	1 U	1 U	1 U	0 5 U	1 U	0 5 U	0 5 U	0 5 U	0 5 U
1 1 Dichloroethene	7	ug/L	1 U	1 U	1 U	0 5 U	1 U	0 5 U	0 5 U	0 5 U	0 5 U
1,2 Dichloroethane	5	ug/L	1 U	1 U	1 U	0 5 U	1 U	0 5 U	0 5 U	0 5 U	0 5 U
Acetone	50	ug/L	b/								
Bromoform	NA c/	ug/L	1 U	1 U	1 U	0 2 J	1 U	0 5 U	0 5 U	0 5 U	0 5 U
Carbon Disulfide	5	ug/L									
Carbon Tetrachloride	5	ug/L	1 U	1 U	1 U	0 5 U	1 U	0 5 U	0 5 U	0 5 U	0 5 U
Chloroform	NA	ug/L	1 U	0 3 J	1 U	0 5 U	0 4 JB	0 5 U	0 5 U	0 5 U	0 5 U
Methylene Chloride	5	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
Tetrachloroethene	5	ug/L	1 U	0 1 J	1 U	0 5 U	0 5 J	0 5 U	0 5 U	0 3 J	0 5 U
Toluene	2000	ug/L	1 U	1 U	1 U	0 5 U	0 5 J	0 5 U	0 5 U	0 5 U	0 5 U
Trichloroethene	5	ug/L	1 U	8	1 U	0 5 U	1 B	0 5 U	0 5 U	0 5 U	0 5 U
Trichlorofluoromethane	NA	ug/L	1 U	1 U	1 U	0 5 U	1 U	0 5 U	0 5 U	0 8	0 5 U
Gross Alpha d/	15	pCi/L		21 55	26 16	20 91					31 89
Gross Beta	50	pCi/L		13 41	10 57	12 72					13 93
Uranium (total)	40	pCi/L		21 43	23 98	20 60					34 22
Copper (dissolved)	200	ug/L									
Iron (dissolved)	300	ug/L									
Lead (dissolved)	50	ug/L				--					
Selenium (dissolved)	10	ug/L			2 58	9 5					20 2
Thallium (dissolved)	10	ug/L									
Nitrate/Nitrite	10	mg/L	3 4	4 9	7 5	0 541	5 2	24 1	3 8	1 83	0 08
Sulfate	250	mg/L			327	306		121			440
Total Dissolved Solids	400	mg/L			1230	1073		720			1524

a/ Refer to Appendix A for an explanation of the data qualifiers
b/ = Data not available
c/ NA = No ARAR exists for this constituent
d/ Note that this table does not include the error bounds on the radiological data

3 2 OU1 FRENCH DRAIN SUMP AND COLLECTION WELL CHARACTERISTICS

Collection Well water is now collected separately from the French Drain Sump water and collection and treatment of water from the Building 881 Footing Drain was discontinued in September 1994 Therefore the current French Drain Sump data is representative of only those waters that seep from the groundwater table into the French Drain For the October November December 1995 period quarterly sampling was performed at the French Drain Sump and the Collection Well

Table 3 2 presents a synopsis of selected French Drain Sump and Collection Well data for the following categories of constituents

VOCs
Radionuclides
Metals
Water Quality

All constituents which exceeded OU1 ARARs are included in Table 3 2 however compounds which did not exceed OU1 ARARs are not necessarily included in the table

As can be seen in Table 3 2 samples taken from the French Drain Sump during the October through December 1995 period did not exceed OU1 VOC ARARs Those constituents which did exceed OU1 ARARs include the following

FRENCH DRAIN SUMP

Compound	Exceedance Range	Units	OU1 ARAR
Selenium (dissolved)	45 7	ug/L	10
Total Dissolved Solids	696	mg/L	400

Tentatively Identified Compounds (TICs) were also identified during French Drain Sump sampling however these compounds do not have associated OU1 ARARs

Table 3 2 also presents a synopsis of Collection Well data for the October through December 1995 period As can be seen in Table 3 2 samples taken from the Collection Well continue to contain elevated levels of VOCs Those constituents which did exceed OU1 ARARs include the following

COLLECTION WELL

Compound	Exceedance Range	Units	OU1 ARAR
1 1 Dichloroethene	12	ug/L	7
Carbon Tetrachloride	20	ug/L	5
Tetrachloroethene	79	ug/L	5
Trichloroethene	690	ug/L	5
Gross Alpha	20 18	pCi/L	15
Selenium	821	ug/L	10
Sulfate	223	mg/L	250
Total Dissolved Solids	1136	mg/L	400

TICs benzene benzoic acid, and trichlorofluoromethane were also identified during Collection Well sampling however these compounds do not have associated OU1 ARARs

TABLE 3 2
CONSOLIDATED WATER TREATMENT FACILITY
COMPARISON OF SELECTED OU1 INFLUENT SOURCE CONSTITUENTS TO OU1 ARARS
OCTOBER, NOVEMBER DECEMBER 1995

COMPOUND	OU1 ARAR	UNITS	FRENCH DRAIN SUMP 10 Oct 95		COLLECTION WELL 10 Oct 95	
1,1,1 Trichloroethane	200	ug/L	0 5	U a/	4	
1,1,2 Trichlorethane	5	ug/L	0 5	U	0 5	U
1,1 Dichloroethane	5	ug/L	0 5	U	0 5	U
1,1 Dichloroethene	7	ug/L	0 5	U	12	E
1,2 Dichloroethane	5	ug/L	0 5	U	0 5	U
Acetone	50	ug/L	1	U	1	U
Benzene	NA b/	ug/L	0 5	U	0 3	J
Benzoic Acid	NA	ug/L	-- c/		4	JN
Carbon Disulfide	5	ug/L	--		-	
Carbon Tetrachloride	5	ug/L	0 5	U	20	DE
Chloroform	NA	ug/L	0 5	U	1	
Methylene Chloride	5	ug/L	2	B	2 B / 230 BD	d/
Tetrachloroethene	5	ug/L	0 6		29	D
Toluene	2000	ug/L	0 5	U	0 5	U
Trichloroethene	5	ug/L	0 2	J	690	E
Trichlorofluoromethane	NA	ug/L	0 5	U	0 4	J
TICs Volatile	NA	ug/L	0 8	J	170	J
TICs Semivolatile	NA	ug/L	7	J	7	J
Gross Alpha e/	15	pCi/L	12 61		20 18	
Gross Beta	50	pCi/L	8 952		11.95	
Uranium (total)	40	pCi/L	13 19		23 02	
Copper (dissolved)	200	ug/L	20 2	B	18 8	B
Iron (dissolved)	300	ug/L	69 1	B	64	B
Lead (dissolved)	50	ug/L	0 8	U	0 8	U
Selenium (dissolved)	10	ug/L	5 2		5 1	
Thallium (dissolved)	10	ug/L	4 1	U	4 1	U
Zinc (dissolved)	2000	ug/L	130		20 8	
Hardness (calculated from Ca and Mg)	NA	mg/L	433		621	
Chloride	250	mg/L	83 3		197	
Nitrite/Nitrate	10	mg/L	1 68		6 14	
Sulfate	250	mg/L	116		323	
Total Dissolved Solids	400	mg/L	696		1134	

a/ Refer to Appendix A for an explanation of the data qualifiers
b/ NA = No ARAR exists for this constituent
c/ = Data not available
d/ The result of the first run was 2 B Because the second run was a 100 times dilution the blank contamination must be multiplied by 100 hence the result of 230 BD
e/ Note that this table does not include the error bound on the radiological data

14

3 3 OU2 SURFACE WATER CHARACTERISTICS

Surface water is sampled on a quarterly basis from SW 59 SW 61 and SW 132 Although the Environmental Protection Agency and the Colorado Department of Public Health and the Environment authorized the discontinuation of the collection and treatment of SW 61 and SW 132 on April 24 1994 the two surface water stations continue to be sampled to verify that no increase in contamination is occurring Collection and treatment for SW-61 and SW 132 was discontinued on May 6 1994 Presently only SW 59 water is collected and treated

Table 3 3 presents a synopsis of OU2 Surface Water data for the October through December 1995 period As can be seen in Table 3 3 those constituents which did exceed OU2 ARARs include the following

SURFACE WATER STATIONS SW 59, SW 61 and SW 132

Compound	Stations	Exceedance Range	Units	OU2 ARAR
Carbon Tetrachloride	SW-59	44	ug/L	5
Chloroform	SW 59	14	ug/L	1
Tetrachloroethene	SW 59	23	ug/L	1
Trichloroethene	SW-59	27	ug/L	5
Vinyl Chloride	SW-59 SW-61	5 to 7	ug/L	2
Americium	SW 59	0 15	pCi/L	0 05
Gross Alpha	SW 59	33	pCi/L	11
Gross Beta	SW 59	20	pCi/L	19
Plutonium 238/239/240	SW 59	0 08	pCi/L	0 05
Aluminum (total)	SW 59 SW-61	1070 to 6750	ug/L	200
Iron (total)	SW 59 SW-61	1360 to 6070	ug/L	1000
Lead (total)	SW-59	12 1	ug/L	5
Manganese (total)	SW 59	3430	ug/L	1000
Zinc (total)	SW 59 SW 61	83 9 to 659	ug/L	50

Other compounds such as 1 1 1 Trichloroethane and cis 1 2-Dichloroethene were also identified during the sampling however these constituents do not have OU2 ARARs

TABLE 3-3
CONSOLIDATED WATER TREATMENT FACILITY
COMPARISON OF SELECTED SW-59, SW-61 AND SW 132 CONSTITUENTS TO OU2 ARARS
OCTOBER, NOVEMBER, DECEMBER 1995

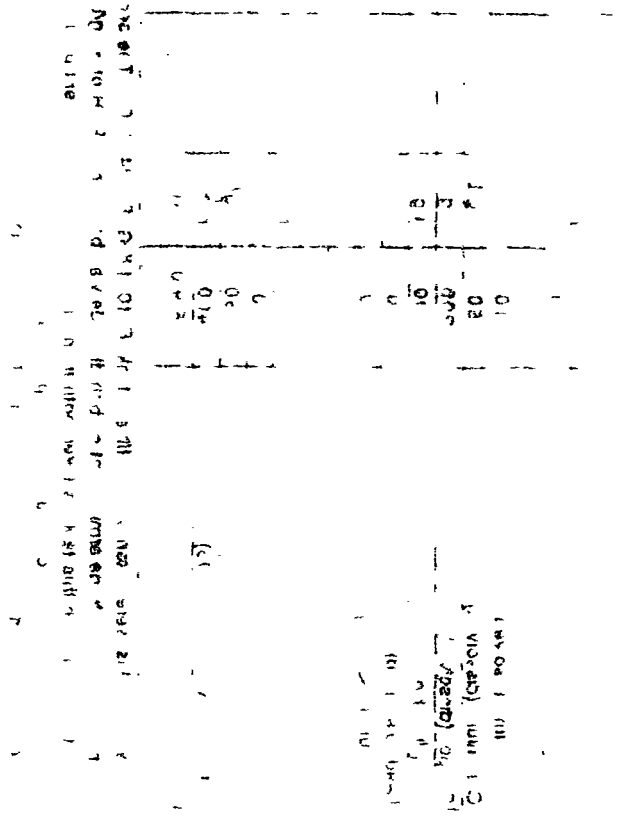
COMPOUND	OU2 ARARs	Units	SW 59 13 Dec 95	SW 61 13 Dec 95	SW 132 13 Dec 95
1,1,1 Trichloroethane	NA a/	ug/L	3	1 0 U b/	1 0 U
1,1 Dichloroethane	NA	ug/L	1 0 U	2	1 0 U
1,1 Dichloroethene	7	ug/L	2	1 0 U	1 0 U
1,2 Dichloroethane	NA	ug/L	1 0 U	1 0 U	1 0 U
Carbon Tetrachloride	5	ug/L	[illegible]	1	1 0 U
Chloroform	1	ug/L	[illegible]	1 0 U	1 0 U
Methylene Chloride	NA	ug/L	1 0 U	1 0 U	1 0 U
Tetrachloroethene	1	ug/L	23	1 0 U	1 0 U
Trichloroethene	5	ug/L	67	1 0 U	1 0 U
Vinyl Chloride	2	ug/L	[illegible]	[illegible]	1 0 U
cis 1,2 Dichloroethene	NA	ug/L	25	12	1 0 U
Americium c/	0 05	pCi/L	[illegible]	0 02	0 01
Gross Alpha	1 1	pCi/L	[illegible]	4	3
Gross Beta	1 9	pCi/L	[illegible]	3	2
Plutonium 238/239/240 (total)	0 05	pCi/L	[illegible]	0,02	0 01
Uranium, (total)	1 0	pCi/L	8 74	6 04	2 87
Aluminum (total)	200	ug/L	[illegible]	[illegible]	45 7 BN
Copper (total)	25	ug/L	13 8 B	4 9 B	6 1 B
Iron (dissolved)	300	ug/L	d/		
Iron (total)	1000	ug/L	[illegible]	[illegible]	163
Lead (total)	5	ug/L	[illegible]	1 3	1 0 UW
Manganese (total)	1000	ug/L	[illegible]	77 3	13 4 B
Manganese (dissolved)	50	ug/L			
Selenium (total)	1 0	ug/L	1 0 U	1 0 U	1 2
Zinc (total)	50	ug/L	[illegible]	[illegible]	29 4
Total Dissolved Solids (TDS)	NS	mg/L			
Chloride	NS	mg/L			
Sulfate	NS	mg/L			
Hardness (as CaCO3 calculated from Ca and Mg)	NA	mg/L	480	280	128

a/ NA = No ARAR exists for this constituent
b/ Refer to Appendix A for an explanation of the data qualifiers
c/ Note that this table does not include the error bounds on the radiological data
d/ = Data not available

3 4 TREATED EFFLUENT CHARACTERISTICS

Treated effluent from the CWTF is stored in one of three Effluent Storage Tanks prior to discharge An Effluent Storage Tank is sampled once it is full, and the tank is discharged if the data show that OU1 ARARs have not been exceeded. Table 3-4 presents a synopsis of selected effluent tank data for January through March 1996

The Effluent Storage Tank discharged in January 1996 contained treated water from OU1 influent sources, purge water, MDF water, and snow melt pumped from CWTF containments[3] The treated effluent water did not exceed OU1 ARARs (Note that not all analyzed compounds are presented on Table 3-4)



[3] The Effluent Storage Tank discharged in January 1996 did not contain any OU2 water The water in this Effluent Tank was collected and treated prior to the receipt of OU2 water The full Effluent Tank was sampled on September 19 1995 and Building 891 did not begin treating OU2 SW 059 water until September 18 1995

TABLE 3-4
CONSOLIDATED WATER TREATMENT FACILITY
COMPARISON OF SELECTED EFFLUENT STORAGE TANK DATA TO OU1 ARARS
JANUARY FEBRUARY, MARCH 1996

			CWTF Effluent Tanks		
			Tank No	T 206	
	OU1		Sampled	9/19/95 12/6/95 a/	b/
COMPOUND	ARARs	UNITS	Discharged	16-Jan-96	
Trichloroethane 1,1,1	200	ug/L		0 5 U	c/
Trichloroethane 1,1,2	5	ug/L		0 5 U	
Dichloroethane 1,1	5	ug/L		0 5 U	
Dichloroethene 1,1	7	ug/L		0 5 U	
Dichloroethane 1,2	5	ug/L		0 5 U	
Acetone	50	ug/L		1 U	
Carbon disulfide	5	ug/L		1 U	
Carbon tetrachloride	5	ug/L		0 5 U	
Chloroform	NA	ug/L		0 5 U	
Methylene chloride	5	ug/L		0 8 BJ	
Tetrachloroethene	5	ug/L		0 5 U	
Toluene	2000	ug/L		0.5 U	
Trichloroethene (TCE)	5	ug/L		0 5 U	
Vinyl chloride	NA	ug/L		1 U	
Americium 241 d/	4	pCi/L		0 004 J	
Gross Alpha	15	pCi/L		0 0113 J	
Gross Beta	50	pCi/L		0 9998 J	
Plutonium 238/239/240 (total-calculated)	15	pCi/L		0 014 J	
Strontium 89/90	8	pCi/L		0.157 J	
Tritium	20000	pCi/L		24 05 J	
Uranium (total calculated)	40	pCi/L		0 06 J	
Cadmium (dissolved)	10	ug/L		3 1 U	
Chromium (dissolved)	50	ug/L		2 8 U	
Copper (dissolved)	200	ug/L		14.2 B	
Iron (dissolved)	300	ug/L		54 5 B	
Lead (dissolved)	50	ug/L		1 2 U	
Selenium (dissolved)	10	ug/L		3.7 B	
Zinc (dissolved)	2000	ug/L		20 7	
Chloride	250	mg/L		3.4	
Nitrate + Nitrite	10	mg/L		0 232	
Sulfate	250	mg/L		8 06	
Total Dissolved Solids (TDS)	400	mg/L		78	
pH	6 5-8.0	S.U.		7 52	

a/ Two samples were taken of this effluent tank (FT10442RG FT10455RG) The second sample was taken only for organics to determine that carbon disulfide was below the ARAR of 5 ug/L.

b/ Data presented in this table is taken both from RFEDs and from faxes sent by the laboratory and includes both original and replicate/duplicate sample data.

c/ Refer to Appendix A for an explanation of the data qualifiers

d/ Note that this table does not include the error bound on the radiological data.

4 0 ENVIRONMENTAL COMPLIANCE

On January 18 1996 a the pipe leadmg from the French Dram Sump to the CWTF Influent Storage Tanks froze and resulted m the release of contammated groundwater from an m line flange Approxmately 2 gallons of water was released to containment and approxmately one cup of contamnated water was released to soil located mmediately outside of the contamment berm. Potentially contammated soil was hand excavated, and a sample of the underlymg soil was taken to verify adequacy of cleanup The soil verification sample was analyzed for VOCs and all VOC constituents were non-detect. All appropriate notifications were made and the situation was mmediately corrected

There were no periods of non-collection at the OU2 SW 59 weir during the January February March 1996 period

5 0 ANTICIPATED OPERATIONS FOR NEXT QUARTER

Collection and treatment of water from the French Dram Sump will continue as normal Water from the Collection Well will continue to be collected m the OU1 trailer-mounted container and transported to the CWTF for off loading and treatment. Purge mcidental, and decontammation pad waters will continue to be accepted and treated

Collection and transport of SW-59 water to the CWTF will continue via the OU2 trailer mounted container until construction of the above-ground storage tank adjacent to SW 59 is complete after which SW 59 water will be periodically transferred from the above-ground storage tank to the CWTF using a tanker truck.

It is expected that the CWTF will continue to accept and treat waters from ER Accelerated Action Projects

The process flowpath for the water to be treated is chosen based upon the influent contaminants and best anticipated method of treatment. Efforts will be made to minimize waste generation during CWTF operations

Appendix A
Data Qualifiers and Descriptions

Selected Laboratory Data Qualifiers and Descriptions

Qualifier	Description
B	< method detection limit but >= instrument detection limit (INORGANIC)
B	Analyte found in blank and sample (ORGANIC)
D	Compound identified using secondary dilution factor (ORGANIC)
E	Concentration exceeds calibration range of instrument (ORGANIC)
E	Estimated due to interference (INORGANIC)
J	Estimated value, < sample s detection limit
N	Spiked recovery not within control limits (INORGANIC)
S	Determined by MSA (INORGANIC)
U	Undetected, analyzed for but not detected
W	Post-digest sample outside of control limit (INORGANIC)

Selected Data Validation Qualifiers and Descriptions

Qualifier	Description
A	Data is acceptable, with qualifications
JA	Estimated, acceptable
R	Data is rejected
V	Data is valid
Y	Analytical results in validation process
Z	Validation was not requested or performed

Appendix A
Data Qualifiers and Descriptions

Selected Laboratory Data Qualifiers and Descriptions

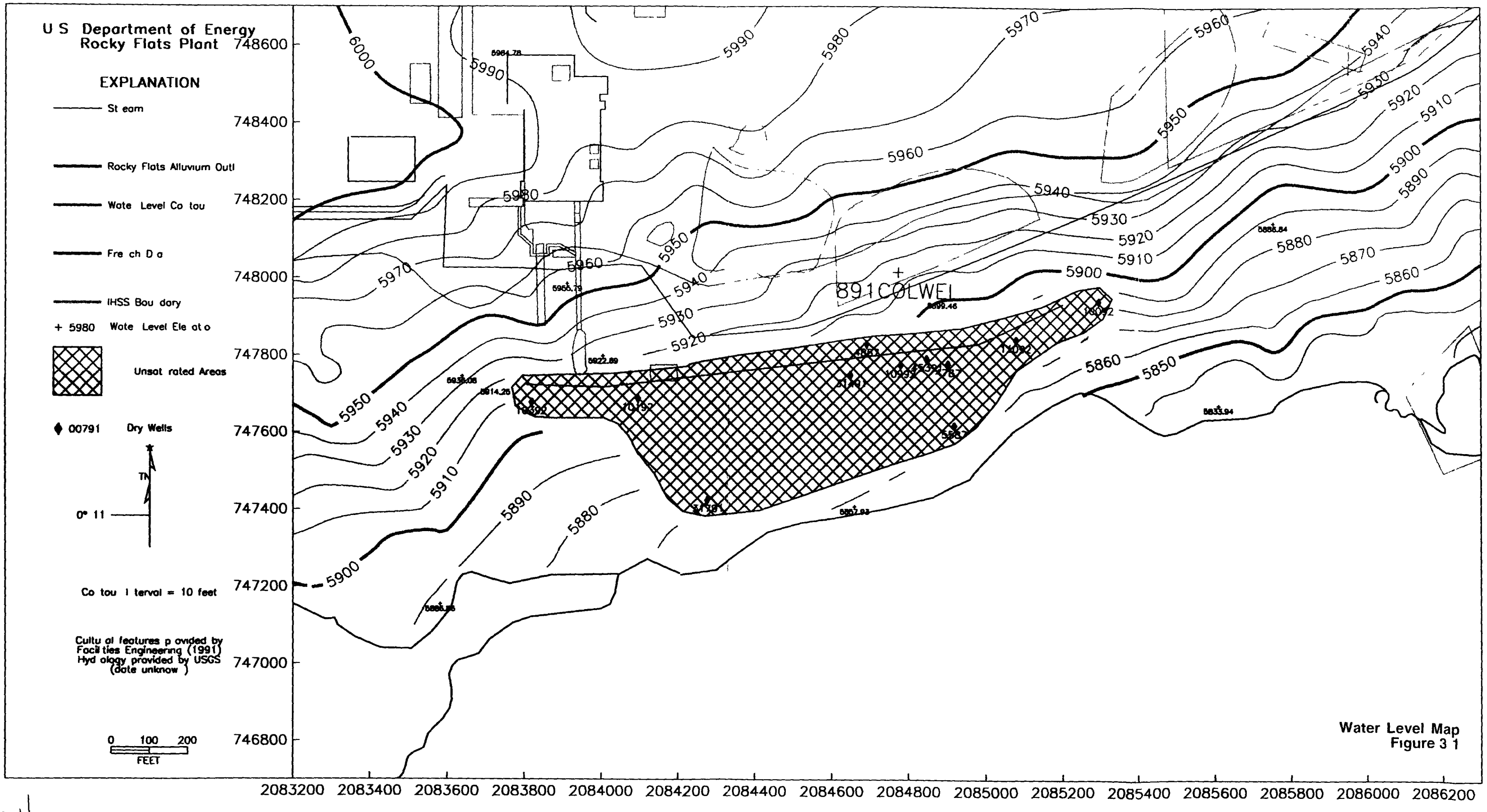
Qualifier	Description
B	< method detection limit but >= instrument detection limit (INORGANIC)
B	Analyte found in blank and sample (ORGANIC)
D	Compound identified using secondary dilution factor (ORGANIC)
E	Concentration exceeds calibration range of instrument (ORGANIC)
E	Estimated due to interference (INORGANIC)
J	Estimated value, < sample s detection limit
N	Spiked recovery not within control limits (INORGANIC)
S	Determined by MSA (INORGANIC)
U	Undetected, analyzed for but not detected
W	Post-digest sample outside of control limit (INORGANIC)

Selected Data Validation Qualifiers and Descriptions

Qualifier	Description
A	Data is acceptable, with qualifications
JA	Estimated, acceptable
R	Data is rejected
V	Data is valid
Y	Analytical results in validation process
Z	Validation was not requested or performed

Figure 3 1

RFETS 881 Hillside January – March 1996 Water Level Map



24/24